

Serial No. 10/657,179

Docket No. MRE-0063

Amendment dated January 17, 2006

Reply to Office Action of October 17, 2005

REMARKS/ARGUMENTS

Claims 1-35 are pending in this application. By this Amendment, claims 4-6, 20, 24, 25, 31 and 33 are amended to correct minor informalities, and allowable claim 14 is amended to incorporate the subject matter of base claim 1 and intervening claims 3 and 6. Support for the claims can be found throughout the specification, including the original claims, and the drawings. Withdrawal of the rejections in view of the following remarks is respectfully requested.

The Examiner is thanked for the indication that claims 14-17 define patentable subject matter. Claim 14 has been rewritten in independent form, and thus claim 14, as well as claims 15-17, which depend therefrom, should be in condition for allowance.

The Office Action rejects claims 1-13 and 18-35 under 35 U.S.C. §103(a) over U.S. Patent No. 6,617,843 to Min et al. (hereinafter "Min") in view of Park, U.S. Patent Publication No. 2002/0185259 (hereinafter "Park"). The rejection is respectfully traversed.

Independent claim 1 is directed to a device for compensating for heat generation in a modular IC test handler, the device being attached to a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame, the device comprising, *inter alia*, at least one cooling fluid spraying unit configured to spray the cooling fluid supplied through the cooling fluid flow passage toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit.

Independent claim 21 recites, *inter alia*, a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame for pushing edges of modular ICs mounted on carriers to connect the modular ICs to the plurality of test sockets, and at least one cooling fluid spraying unit configured to spray the cooling fluid supplied through the cooling fluid flow passage toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit. Independent claim 32 is directed to a device for compensating for heat generation in a modular IC test handler, the device being attached to a press unit including a frame and a plurality of push bars arranged at fixed intervals on a front surface of the frame, the device comprising, *inter alia*, at least one cooling fluid spraying unit configured to be supported by the at least one supporting member so as to be interposed between the plurality of push bars of the press unit and configured to spray the cooling fluid supplied through the cooling fluid flow passage toward modular ICs connected to the test sockets of handler. Independent claim 35 recites, *inter alia*, spraying cooling fluid through at least one cooling fluid spraying unit toward faces of the modular ICs in a direction which is oblique with respect to a central plane of the at least one cooling fluid spraying unit.

As acknowledged by the Examiner in the remarks regarding independent claims 1, 21, 32 and 35, Min neither discloses nor suggests such features. More specifically, Min discloses a contactor for IC chips, including a fixed block 110 which couples a test tray 116 loaded with devices to a tester 115, and a push plate 150 positioned opposite the test tray 116. A plurality of

air nozzles 160 which extend from a face of the push plate 150 and toward the test tray 116. As the tips of the nozzles 160 contact the tray 116, heating or cooling air is blown out through the nozzles 160 in an axial direction of the nozzles 160 and directly onto a face of a corresponding IC chip. This axial flow is parallel to, and not oblique to, a central plane of the nozzles 160, and in a direction substantially orthogonal to the face of the IC chip. Thus, Min neither discloses nor suggests at least one a cooling fluid spraying unit configured to spray cooling fluid toward faces of modular ICs in an oblique direction with respect to a central plane of the at least one cooling fluid spraying unit, as recited in independent claims 1 and 21, nor the corresponding method step recited in independent claim 35.

Further, it would be well understood by one of ordinary skill in the art that a modular IC, as recited in independent claim 1, comprises a printed circuit board (PCB) and a plurality of ICs mounted thereon, and terminal pins of the PCB are electrically connected to test sockets for testing in a modular IC handler. In contrast, in a handler which tests IC chips such as that disclosed by Min, the IC chips are directly connected to the test sockets. Thus, because Min's handler is designed to test IC chips, it differs in structure, and requires that the heating or cooling air be sprayed directly onto the faces of the IC chips, in a direction which is axial with respect to the nozzles 160, and thus necessarily not oblique, with respect to a central plane of the nozzle 116.

Further, if the push plate 150 and nozzles 160 disclosed by Min are compared to the press unit and at least one cooling fluid spraying unit, respectively, recited in independent claims 1, 21, 32 and 35, as suggested in the Office Action, then Min clearly neither discloses nor suggests the recited plurality of push bars. Min discloses that the plurality of nozzles 160 make contact with the tray of IC chips, but not that the nozzles 160 impart any force on edges of the devices which force them into contact with the tester 115, as do the recited push bars. Rather, Min discloses that the devices are brought into contact with the sockets of the tester 115 as the tray 116 is fitted into a groove formed in the fixed block 110 and the combining portion 112 of the fixed block 110 is fitted into the tester 115 (see column 3, lines 31-45 of Min). Thus, Min neither discloses nor suggests a plurality of push bars as recited in independent claims 1, 21 and 32, let alone at least one cooling fluid spraying unit interposed between such a plurality of push bars, as recited in independent claim 32.

Further, Park fails to overcome the deficiencies of Min. Park discloses an angle mounted fan sink 300, including a fan assembly 312 positioned oblique to a base 308 of a heat sink 304. The heat sink is positioned on an upper surface of an electronic device 302, and includes a plurality of vertically oriented fins 310. As the radial fan 318 portion of the fan assembly 312 rotates, a cooling medium is circulated over the heat sink 304 and through the fins 310 to cool the base portion 308 of the heat sink 304 and dissipate heat throughout the heat sink 304 to improve thermal efficiency.

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It appears the Examiner has drawn a comparison between the fan assembly 312 disclosed by Park and the cooling fluid spraying unit recited in independent claims 1, 21, 32 and 35. However, Park clearly discloses that the fan assembly 312 includes a radial fan 318, and it would be well understood by one of ordinary skill in the art that rotation of the radial fan 318 causes the cooling medium to be blown in an axial direction of the radial fan 318, thus maximizing the amount of cooling medium directed into and circulated through the fins 310 and across an entire surface of the base 308 of the heat sink 304. Assuming a central plane of the radial fan extends through the hub 320 of the radial fan 318, this axial dispersion of cooling medium is in a direction which is parallel to a central plane of the radial fan 318/fan assembly 312, which has been compared to the recited cooling fluid spraying unit, and not oblique to the central plane of the radial fan 318/fan assembly 312. Rather, the oblique positioning of the fan assembly 312 relative to the device 302 simply allows the axial flow of cooling medium to reach a larger portion of the heat sink 304.

Additionally, there would have been no motivation to modify the IC chip contactor disclosed by Min to include the fan sink disclosed by Park. Min's IC chip contactor is specifically designed to accommodate IC chips during testing, and the structural design of Min's device requires that the nozzles be placed in direct contact with the chips in order to ensure proper heating and/or cooling. In contrast, Park's fan sink is specifically directed to application atop an electronic device such as a processor or memory portion of a motherboard contained

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within a computing device, and is thus clearly not related, either in form or in function, to Min's device. Min's device could not be readily adapted to incorporate an obliquely positioned fan sink. Rather, it is respectfully submitted that such a modification would destroy the originally intended functionality of Min's device. Neither Min nor Park provides any teaching or suggestion that such a combination could or should be made, nor that it would be advantageous to do so.

For at least these reasons, it is respectfully submitted that independent claims 1, 21, 32 and 35 are allowable over the applied combination, and thus the rejection of independent claims 1, 21, 32 and 35 under 35 U.S.C. §103(a) over Min and Park should be withdrawn. Dependent claims 2-13 and 18-34 are allowable at least for the reasons set forth above with respect to independent claims 1, 21 and 32, from which they respectively depend, as well as for their added features.

CONCLUSION

In view of the foregoing amendments and remarks, it is respectfully submitted that the application is in condition for allowance. If the Examiner believes that any additional changes would place the application in better condition for allowance, the Examiner is invited to contact the undersigned, **JOANNA K. MASON**, at the telephone number listed below.

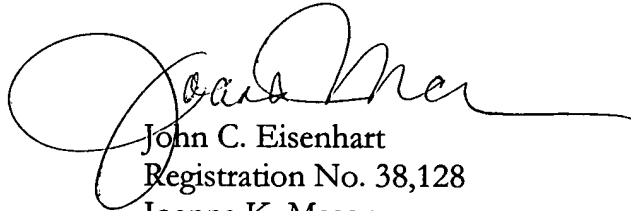
To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this,

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concurrent and future replies, including extension of time fees, to Deposit Account 16-0607 and
please credit any excess fees to such deposit account.

Respectfully submitted,
FLESHNER & KIM, LLP



John C. Eisenhart
Registration No. 38,128
Joanna K. Mason
Registration No. 56,408

P.O. Box 221200
Chantilly, Virginia 20153-1200
(703) 766-3701 DYK:CLD:JKM/cah
Date: January 17, 2006

Please direct all correspondence to Customer Number 34610

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